

REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

I. Amendments to the Specification and Abstract

The specification and abstract have been reviewed and revised to improve their English grammar. No new matter has been added.

II. Amendments to the Claims

Claim 11 has been cancelled without prejudice or disclaimer of the subject matter contained therein.

Further, independent claims 1 and 12 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the references relied upon in the rejections discussed below. Support for these amendments can be found, at least, in paragraph [0056] of the specification. Moreover, claim 10 has been amended to comply with the enablement requirement.

It is also noted that claims 1-10 and 12-16 have been amended to make a number of editorial revisions thereto. These editorial revisions have been made to place the claims in better U.S. form. Further, these editorial revisions have not been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

III. 35 U.S.C. § 112, First Paragraph Rejection

Claim 10 and 11 were rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the enablement requirement. This rejection is moot regarding claim 11, in view of the cancellation thereof. In addition, this rejection is believed to be clearly inapplicable to amended claim 10 for the following reasons.

Specifically, claim 10 was rejected to reciting that “*the low order Z-buffer memory is physically separable from the three-dimensional shape drawing device,*” which is allegedly not disclosed in the specification. Claim 10 has been amended to recite that the high order Z-buffer memory and the low order Z-buffer memory have the same physical configuration, wherein the high order bits and the low order bits are separated as different bit strings. Support for these clarifying amendments can be found, at least, in paragraph [0058] of the specification.

Furthermore, Applicants note that claim 9 has also been amended to clarify that the high order Z-buffer memory and the low order Z-buffer memory are physically separated from each other, wherein the high order bits and the low order bits are separated as different bit strings. Support for these clarifying amendments can be found, at least, in paragraph [0058] of the specification.

IV. 35 U.S.C. § 102 and §103 Rejections

Claims 1-5, 7, 8 and 12-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Dowdell. Further, claims 6, 9-11 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of Dowdell and Andrews. These rejections are believed clearly inapplicable to amended independent claims 1 and 12 and the claims that depend therefrom for the following reasons.

Amended independent claim 1 recites a three-dimensional shape drawing device including a depth value calculation section for calculating a depth value of a pixel to be drawn, a high order Z-buffer memory for retaining high order bits of a depth value of a pixel to be displayed as a front face, and a low order Z-buffer memory for retaining low order bits of the depth value of the pixel to be displayed as the front face, such that a number of the low order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory.

The above described structure required by claim 1 causes a reduction in bus traffic so that faster drawing of a three-dimensional shape can be obtained. This is achieved because the number of the lower order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory.

Dowdell fails to disclose or suggest the above-mentioned distinguishing features and the result of the structure required by amended independent claim 1.

Rather, Dowdell merely teaches that z values are divided into three types of bytes (i.e., most significant bytes, middle significant bytes, and least significant bytes) so that parallel processing can be achieved. Specifically, Dowdell teaches that this parallel processing is achieved by accessing (new and old) most significant bytes of the z value from a memory, and then, only if the new and old most significant bytes have a same value, the middle significant bytes and the least significant bytes can be accessed (see col. 4, lines 45-50 and 61-68; and col. 5, lines 15-27).

Thus, in view of the above, it is clear that Dowdell teaches dividing the z values into most, middle and least significant bytes, but fails to disclose or suggest that the number of the

lower order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory, as recited in claim 1.

Further, even though Dowdell teaches comparing values of new and old significant bytes, Dowdell still fails to disclose or suggest that the number of the lower order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory, as required by claim 1.

Moreover, in view of the above, it is apparent that Dowdell teaches accessing (new and old) most significant bytes of the z value from a memory, and then, only if the new and old most significant bytes have a same value, the middle significant bytes and the least significant bytes can be accessed, but fails to disclose or suggest that a number of the middle and least significant bytes accessed from the memory is equal to or larger than a number of the most significant bytes, as required by claim 1.

Therefore, because of the above-mentioned distinctions it is believed clear that independent claim 1 and claims 2-10 that depend therefrom would not have been anticipated by Dowdell.

Furthermore, in light of the discussion above, Dowdell does not provide the above-mentioned benefits the structure required by amended independent claim 1 (i.e., causing a reduction in bus traffic so that faster drawing of the three-dimensional shape can be obtained), because Dowdell fails to disclose or suggest that the number of the lower order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer memory, as required by claim 1.

Furthermore, there is no disclosure or suggestion in Dowdell or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Dowdell to

obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 and claims 2-10 that depend therefrom are clearly allowable over the prior art of record.

Regarding dependent claims 6, 9-11 and 16, which were rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of Dowdell and Andrews secondary references, it is respectfully submitted that this secondary reference does not disclose or suggest the above-discussed features of independent claim 1 which are lacking from the Dowdell reference. Therefore, no obvious combination of Dowdell with the secondary reference would result in, or otherwise render obvious, the invention recited independent claim 1 and the claims that depend therefrom.

Amended independent claim 12 is directed to a method and recites features that correspond to the above-mentioned distinguishing features of independent claim 1. Thus, for the same reasons discussed above, it is respectfully submitted that independent claim 12 and claims 13-16 that depend therefrom are allowable over the prior art of record.

V. Conclusion

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

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